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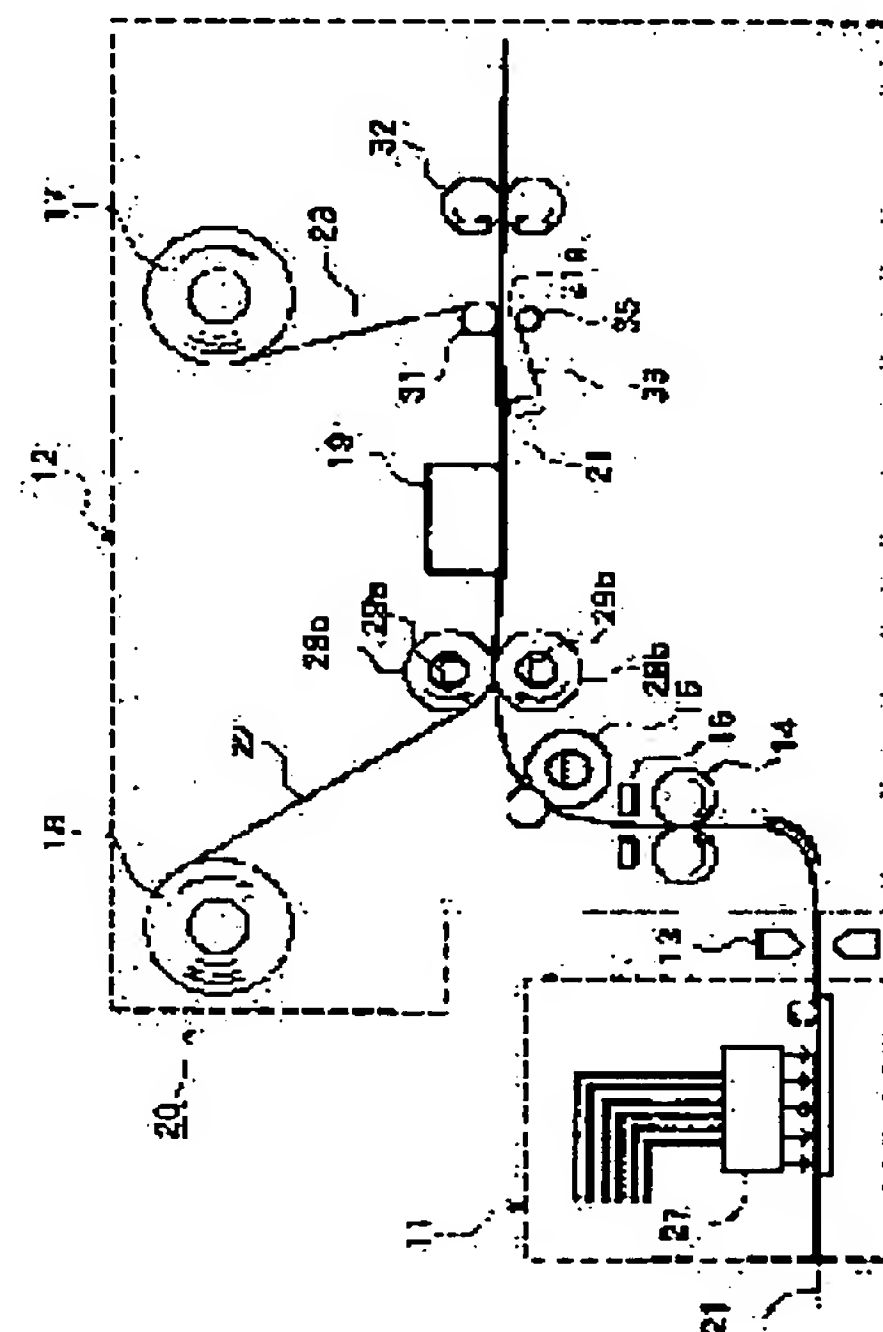
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(54) LAMINATING EQUIPMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent a member for forming a protective layer protecting an information recording surface of a recording material from projecting to the rear end part of the recording material.

SOLUTION: Laminating equipment 20 has laminated film running means 18 and 17 whereby a laminated film 22 having a heat insulating base and the member for forming the protective layer in separable lamination is made to run, recording material covering means 28a and 28b which heat and press the recording material and the laminated film to bring them into close contact with each other in a state wherein the information recording surface of the recording material 21 having information recorded on one surface at least and the member for forming the protective layer are opposed to each other, a pair of guiding members 19 and 31 which are arranged apart from each other in the running direction of the laminated film with the recording material in close contact therewith and guide the laminated film, and a pushing means 33 which pushes the recording material with the laminated film in close contact therewith in between the paired guiding members.



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CLAIMS

[Claim(s)]

[Claim 1] A laminate film transit means to make it run the laminate film which has a heat-resistant base material and a member for protection stratification in the shape of a layer disengageable, A recorded material covering means to carry out heating pressurization and to stick said recorded material and said laminate film to one [at least] field after the information recording surface of the recorded material with which information was recorded, and said member for protection stratification have countered, One pair of interior material of a proposal to which it is estranged and arranged in the transit direction of said laminate film which said recorded material stuck, and shows said laminate film, It has the pushing means which pushes in said recorded material which said laminate film stuck between said one pair of interior material of a proposal. Said pushing means When the back end section of said recorded material sticking to said laminate film is located in the upstream of said pushing means, Said recorded material is pushed in between said one pair of interior material of a proposal. And said laminate film transit means Lamination equipment characterized by carrying out the driving-backward line of said laminate film, and passing the interior material of a proposal of the upstream for said back end section of said recorded material among said one pair of interior material of a proposal after said pushing means pushes in and starting actuation.

[Claim 2] A laminate film transit means is lamination equipment according to claim 1 characterized by carrying out the driving-backward line of said laminate film again after carrying out the driving-backward line of said laminate film, and passing the interior material of a proposal of said upstream for said back end section of said recorded material, and it carries out the scudding line of said laminate film and said recorded material passes the interior material of a proposal of said downstream.

[Claim 3] The radius of curvature of the contact section of said pushing means in contact with said recorded material is lamination equipment according to claim 1 or 2 characterized by being larger than the radius of curvature of the contact section in contact with said recorded material of said interior material of a proposal of the upstream.

[Claim 4] It is lamination equipment given in claim 1 characterized by the interior material of a proposal of the upstream being a cooling means to cool said stuck recorded material and said laminate film among said one pair of interior material of a proposal thru/or the inside of 3, and any 1 term.

[Claim 5] It is lamination equipment according to claim 1 or 2 characterized by the interior material of a proposal of the downstream being interior material of a transit proposal which changes the transit direction of said heat-resistant base material among said one pair of interior material of a proposal.

[Claim 6] A laminate film transit means to make it run the laminate film which has a heat-resistant base material and a member for protection stratification in the shape of a layer disengageable, A recorded material covering means to carry out heating pressurization and to stick said recorded material and said laminate film to one [at least] field after the information recording surface of the recorded material with which information was recorded, and said member for protection stratification have countered, A transit direction modification means to change the transit direction of said laminate film which said recorded material stuck, In the downstream of said transit direction modification means after the back end of said recorded material sticking to said laminate film passes said transit modification member It has a penetration means to advance between said members for protection stratification and said recorded materials. Said laminate film transit means Lamination equipment characterized by carrying out the driving-backward line of said laminate film when said penetration means advances between said members for protection stratification and said recorded materials.

[Claim 7] Said penetration means is lamination equipment according to claim 6 characterized by having the

clearance which permits the driving-backward line of said laminate film, and prevents the driving-backward line of said recorded material between said transit direction modification means when located in the location which advanced between said members for protection stratification and said recorded materials.

[Claim 8] Said penetration means is lamination equipment according to claim 6 or 7 characterized by having in the point the recorded material receptacle stop side which catches said recorded material in the condition almost parallel to the transit direction of the laminate film located in the upstream of said transit direction modification means when it advances between said members for protection stratification and said recorded materials.

[Claim 9] A laminate film transit means is lamination equipment given in the inside of claims 1, 2, and 6 characterized by having the supply body of revolution which supplies said imprint material, and the rolling-up body of revolution which rolls round the heat-resistant base material of said imprint material, and any 1 term.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the lamination equipment which prepares a protective layer in the information recording surface of a recorded material [finishing / record].

[0002]

[Description of the Prior Art] Conventionally, recording devices, such as a printer, a copying machine, facsimile, and these compound devices, record the information (for example, image) which consists of a dot pattern on various kinds of recorded materials based on various information. A recording apparatus can be divided into an ink jet type, a wire dot type, a thermal type, a laser-beam type, etc. by the record approach.

[0003] An ink jet-type ink jet recording device carries out regurgitation flight of the globule of ink from the delivery of a recording head, makes it adhere on a recorded material, and records information on a recorded material. For this reason, as compared with other recording devices, from the place where a configuration with it is easy, an ink jet recording device can hold down cost comparatively, and is used in many fields. [a small and sound of operation and] [fundamental]

[0004] There are a regular paper, a sheet plastic, etc. in the recorded material used for this ink jet recording apparatus. the front face of a recorded material -- various kinds -- if it coats with a detailed inorganic material etc., the ink absorption layer which has pore structure on the surface of a recorded material will be formed, and the ink dot which adhered on the recorded material will cease to spread. Especially, the coat paper only for ink is used for the full color printer or the printer currently asked for the high-definition image. Recently, since printing of a photograph tone is desired strongly, it is in the inclination for ink discharge quantity to also increase, and a recorded material is used in the state of the maximum water absorption in many cases.

[0005] Furthermore, in order to raise the grace of a recorded material or image quality, the transparent film which changes to an information recording surface [finishing / record of a recorded material] irreversible is formed in a recorded material, and there is also a thing which enabled it to print continuously the image quality which was excellent in improvement in image quality and weatherability in it.

[0006] Moreover, there are some by which the porosity macromolecule layer which is a member for protection stratification is formed for example, in the printing side in the recorded material which has the layer which changes irreversible in a printing side side. By heat-treating, this porosity macromolecule layer becomes a transparent poly membrane, and carries out covering protection of the printing side.

[0007] Moreover, there are some which serve as transparence resin film which covers a printing side, and protect a front face by heat-treating the recorded material with which the resin porous layer (member for protection stratification) was formed in the printing side side as another porosity macromolecule layer. Anyway, the information recording surface of a recorded material is made for between the heating roller heated by the elevated temperature and the pressurization rollers which were able to apply the high-pressure force to counter a heating roller, and a protective layer with a recorded material transparent on a front face is formed by letting a recorded material pass.

[0008] For this reason, an information recording surface and a heating roller will contact and the front face of a roller will be imprinted by the front face of the transparence poly membrane of a recorded material, or the transparence resin film. In this case, if a blemish is on the surface of a roller, a blemish will be imprinted by the front face of a transparence poly membrane or the transparence resin film, and it will become the cause of a fall of image quality.

[0009] After printing to a recorded material, the approach of forming a transparence macromolecule layer in a

front face is, without preparing the porosity macromolecule layer beforehand on the surface of the recorded material as an option which raises image quality and weatherability, solving these problems.

[0010] In the above-mentioned conventional example, the recorded material an ink absorption layer and whose porosity macromolecule layer are one is divided into a base material, the recorded material which consists of an ink absorption layer, and the imprint material which consists of a sheet plastic (heat-resistant base material) and a porosity macromolecule layer (member for protection stratification) here.

[0011] The fixing approach of porosity macromolecule equipment is explained to a recorded material. First, the porosity macromolecule stratification plane of imprint material is made to counter the recorded material front face which printed information, and it lets the roller pair held with both a recorded material and imprint material at elevated-temperature high pressure pass. Then, a recorded material and imprint material unify with heat and a pressure. Then, after the unified imprint material and the unified recorded material fully get cold, only the sheet plastic of imprint material is exfoliated. Consequently, a transparent porosity macromolecule layer is formed in a recorded material front face.

[0012] A porosity giant-molecule layer will not contact a roller and directly that it is this approach, but it will contact through a sheet plastic. Therefore, the blemish on the front face of a roller is not imprinted by the porosity macromolecule layer, and the printed matter of good image quality is obtained. In this invention, this method is henceforth called a "lamination method."

[0013]

[Problem(s) to be Solved by the Invention] However, when forming a porosity giant-molecule layer in a recorded material with a lamination method, a device, equipment, etc. which exfoliate a sheet plastic certainly from the recorded material unified by heating pressurization are needed.

[0014] Lamination equipment equipped with the device in which a sheet plastic is certainly exfoliated from a recorded material is shown in drawing 11. In drawing 11, by letting the recorded material 21 after a lamination pass, lamination equipment 80 is constituted in the passage pass of the small radius of curvature of the fixed guide 79 so that a rigid high recorded material and a rigid high porosity giant-molecule layer may be separated from a sheet plastic. That is, lamination equipment 80 separates the porosity giant-molecule layer and sheet plastic which were stuck at the tip of a recorded material using the difference in the flexural rigidity of the imprint material 76 and a recorded material 21.

[0015] These things are explained based on drawing 11. The imprint material 76 which consists of a sheet plastic and a porosity macromolecule layer began to roll lamination equipment 80, and a side began to roll it, and it is equipped with the roll 71 and the rolling-up roll 72 by the side of rolling up which rotates in the direction of arbitration with a non-illustrated driving gear. The rolling-up roll 72 rotates according to the clutch device included in the interior synchronizing with fixing roller pair 74 at the time of actuation, adding a predetermined tension to a sheet plastic 81.

[0016] The recorded material 21 with which lamination processing is performed consists of a base material and an ink absorption layer. Printing and desiccation processing have already completed the recorded material 21. a recorded material 21 -- a conveyance roller pair -- it conveys by 75 -- having -- a fixing roller pair -- it draws in 74 -- having -- a fixing roller pair -- the heating pressurization of 74 unites with the imprint material 76.

[0017] It passes contacting a heat sink 78 and the recorded material 21 united with the imprint material 76 is cooled with a heat sink 78. By cooling the imprint material 76 and a recorded material 21, the sheet plastic of the imprint material 76 united with the recorded material 21 can be easily exfoliated now from a porosity macromolecule layer.

[0018] Next, a recorded material 21 tends to be bent up by the acute angle with the fixed guide 79. When the recorded material 21 stuck to the imprint material 76 passes the fixed guide 79, since the rigidity of a recorded material 21 is high, a sheet plastic 81 exfoliates from a porosity macromolecule layer according to the rigid difference of a sheet plastic 81 and a recorded material 21 to the sheet plastic 81 on top.

[0019] The used sheet plastic 81 which exfoliated from the porosity giant-molecule layer is rolled round by the rolling-up roll 72. On the other hand, the recorded material with which the porosity macromolecule layer was established goes straight on horizontally as it is.

[0020] then, the back end section of a porosity macromolecule layer made lamination equipment 80 suspend, and the user tore off by hand and showed it to drawing 11 -- as -- a sheet discharge roller pair -- 83 is prepared, and according to that hauling force, the back end section is lengthened automatically and it dissociates from the porosity macromolecule layer adhering to a sheet plastic 81. By a series of above flow, the recorded material by which lamination processing was carried out is obtained.

[0021] However, the method of separating the back end automatically [the latter] may be unable to tear the back end section of a porosity macromolecule layer completely. For this reason, as the back end section of a porosity giant-molecule layer cannot dissociate from a sheet plastic 81 to the last but a recorded material 21 is shown in drawing 12 , it rolls round together with a sheet plastic as it is, it is involved in a roll 72, and may be in a jam condition.

[0022] namely, a sheet discharge roller pair -- 83 slips by wear etc. -- carrying out -- a sheet discharge roller pair -- if sufficient nip force of 83 is no longer acquired, the back end section of a porosity giant-molecule layer loses adhesive strength with a sheet plastic, and it will roll round with a recorded material 21 as it is, it will be involved in a roll 72, and a jam will arise in the part shown with Sign X. The jam of a recorded material 21 may cause [of the trouble of lamination equipment 83] generating.

[0023] moreover -- as other problems -- a sheet discharge roller pair -- when 83 pulls a porosity macromolecule layer compulsorily horizontally, it begins to see in the edge of a porosity macromolecule layer at which the porosity macromolecule layer which melted lengthens yarn, and was lengthened, the "fillet" which is a part is generated, and the quality of a recorded material may be reduced

[0024] Signs that this fillet is generated are explained based on drawing 13 . Drawing 13 (a) is a state diagram when the back end of a recorded material 21 puts in the fixed guide 79. a recorded material 21 -- a fixing roller pair -- the porosity macromolecule layer 82 of the imprint material 76 has stuck by heating pressurization of 74. By passing the pass which bent the imprint material 76 rapidly as shown in drawing, a sheet plastic 81 dissociates from the porosity macromolecule layer 82, and is rolled round by the rolling-up roll 72.

[0025] In drawing 13 (b), if the recorded member 21 keeps away from a sheet plastic 81, the porosity giant-molecule layer 82 has connected the recorded member 21 and the sheet plastic 81 at this time. the quality of the material which has a fluidity when the porosity macromolecule layer 82 is heated sake -- a fixing roller pair -- the adhesion fluidity is maintained by the pressurization heating back of 74. For this reason, as shown in drawing, the porosity macromolecule layer 82 is pulled and is extended in the shape of yarn.

[0026] In drawing 13 (c), the porosity macromolecule layer 82 is pulled still more, is torn to pieces in the condition of having been extended, becomes yarn-like and remains in the back end of a recorded material 21. It contracts automatically and a short thing stops being conspicuous. However, a long thing is set to fillet 82a of the back end section as it is, and remains. Thus, fillet 82a was produced in the back end section of a recorded material 21 only by pulling horizontally the porosity macromolecule layer 82 of the imprint material 76.

[0027] This invention aims at providing the back end section of the laminated recorded material with the lamination equipment with which the member for protection stratification which protects the information recording surface of a recorded member does not project.

[0028]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the lamination equipment of this invention A laminate film transit means to make it run the laminate film which has a heat-resistant base material and a member for protection stratification in the shape of a layer disengageable, A recorded material covering means to carry out heating pressurization and to stick said recorded material and said laminate film to one [at least] field after the information recording surface of the recorded material with which information was recorded, and said member for protection stratification have countered, One pair of interior material of a proposal to which it is estranged and arranged in the transit direction of said laminate film which said recorded material stuck, and shows said laminate film, It has the pushing means which pushes in said recorded material which said laminate film stuck between said one pair of interior material of a proposal. Said pushing means When the back end section of said recorded material sticking to said laminate film is located in the upstream of said pushing means, Said recorded material is pushed in between said one pair of interior material of a proposal. And said laminate film transit means After said pushing means pushes in and starting actuation, the driving-backward line of said laminate film is carried out, and the interior material of a proposal of the upstream is passed for said back end section of said recorded material among said one pair of interior material of a proposal.

[0029] The laminate film transit means of the lamination equipment of this invention is the business to which the driving-backward line of said laminate film is carried out again, after carrying out the driving-backward line of said laminate film, and passing the interior material of a proposal of said upstream for said back end section of said recorded material, and it carries out the scudding line of said laminate film and said recorded material passes the interior material of a proposal of said downstream.

[0030] The radius of curvature of the contact section of said pushing means in contact with said recorded material of the lamination equipment of this invention is larger than the radius of curvature of the contact

section in contact with said recorded material of said interior material of a proposal of the upstream.

[0031] The interior material of a proposal of the upstream is a cooling means to cool said stuck recorded material and said laminate film, among said one pair of interior material of a proposal of the lamination equipment of this invention.

[0032] The interior material of a proposal of the downstream is interior material of a transit proposal which changes the transit direction of said heat-resistant base material among said one pair of interior material of a proposal of the lamination equipment of this invention.

[0033] In order to attain the above-mentioned purpose, the lamination equipment of this invention A laminate film transit means to make it run the laminate film which has a heat-resistant base material and a member for protection stratification in the shape of a layer disengageable, A recorded material covering means to carry out heating pressurization and to stick said recorded material and said laminate film to one [at least] field after the information recording surface of the recorded material with which information was recorded, and said member for protection stratification have countered, A transit direction modification means to change the transit direction of said laminate film which said recorded material stuck, In the downstream of said transit direction modification means after the back end of said recorded material sticking to said laminate film passes said transit modification member It has a penetration means to advance between said members for protection stratification and said recorded materials, and said laminate film transit means carries out the driving-backward line of said laminate film, when said penetration means advances between said members for protection stratification and said recorded materials.

[0034] Said penetration means of the lamination equipment of this invention has the clearance which permits the driving-backward line of said laminate film, and prevents the driving-backward line of said recorded material between said transit direction modification means, when located in the location which advanced between said members for protection stratification and said recorded materials.

[0035] Said penetration means of the lamination equipment of this invention has in the point the recorded material receptacle stop side which catches said recorded material in the condition almost parallel to the transit direction of the laminate film located in the upstream of said transit direction modification means, when it advances between said members for protection stratification and said recorded materials.

[0036] The laminate film transit means of the lamination equipment of this invention has the supply body of revolution which supplies said imprint material, and the rolling-up body of revolution which rolls round the heat-resistant base material of said imprint material.

[0037]

[Embodiment of the Invention] Hereafter, the lamination equipment of the operation gestalt of this invention is explained based on drawing 1 thru/or drawing 10 .

[0038] (Lamination equipment of the 1st operation gestalt) The imprint material (laminate film) 22 concerning this invention is explained. In drawing 2 , the sheet plastic (heat-resistant base material) 23 excellent in thermal resistance and the member 24 for protection stratification which becomes a transparent protective layer to a recorded material 21 become layer-like, and the imprint material 22 is formed.

[0039] On the sheet plastic 23, the imprint material 22 prepares the monolayer which is the member 24 for protection stratification, or the film layer and latex layer of multilayer thermoplastics, and is formed.

[0040] A sheet plastic 23 needs to exfoliate from the member 24 for protection stratification simply in the phase which is stabilized, and can maintain a configuration, and is stuck to the member 24 for protection stratification on the ink absorption layer 26 of a recorded material 21, and becomes a transparent protective layer, when sticking the imprint material 22 to a recorded material 21 by pressure under the conditions of elevated-temperature high pressure. The thickness which a sheet plastic 23 becomes from ingredients, such as polyethylene terephthalate (PET), polyethylenenaphthalate (PEN), a polyphenylene ape fund (PPS), and polyether sulphone (PES), is formed the shape of the shape of a film, and a sheet within the limits of about 18 to about 50 micrometers.

[0041] In a configuration of using a latex layer for the member 24 for protection stratification, a thermoplastic particle fixes from the sheet plastic 23 to extent which is not simply dedropping, the layer is formed at the sheet-plastic 23 top, and the film can be made if heated. Coating of the coating liquid containing a latex is carried out to a sheet plastic 23 with the roll coating method, a load-bar coating method, a spray coating method, the air-knife-coating method, a slot die coating method, etc., and formation of a latex layer can also be dried and can be performed. Finally the thickness of the latex layer obtained must fully be stuck to the ink absorption layer of a recorded material, and must have thickness required to paste up so that air bubbles may

not exist. Incidentally, a latex layer must have about 100 to about 150% of thickness still more desirably about 150% from about 70% of the amount at least, when the surface roughness of the ink absorption layer 26 of a recorded material is expressed with R_{max} . R_{max} shows the maximum granularity to a base plane, and a base plane shows the thing from arithmetic mean granularity.

[0042] Such imprint material 22 carries out reforming of the front face, and the recorded body 21 which can offer the outstanding image quality consists of a base material 25 and an ink absorption layer 26. As for the ink absorption layer 26, an information image is recorded.

[0043] The sheet which consists of paper material, such as plastic film, such as polyethylene and polyethylene terephthalate (PET), paper of fine quality, coat paper, and a laminated paper, can be mentioned to the base material 25 of the imprint material 22.

[0044] As an ink absorption layer 26 applied to the front face of a base material 25, water soluble polymer emulsions, such as polyvinyl alcohol, vinyl acetate, an acrylic, and urethane, those combination, and the thing that carried out coating of the coating which distributed the synthetic silica further in it can be used. As the coating approach, there are the roll coating method, a rod bar coating method, a spray coating method, a slot die coating method, etc. A recorded material 21 is obtained by drying after applying the above-mentioned coating to a base material 25 using these coating approaches.

[0045] Although the various record approaches are employable as the image formation to the recorded material 21 of a configuration of having explained above, an ink jet recording method is the optimal. There may be an electrostatic suction method, a method which uses a piezoelectric device, a method using a heater element, etc. in an ink jet recording method, and you may be any.

[0046] The ink used for an ink jet recording method just applies the thing which made the aqueous medium contain color material, such as a color and a pigment, to an ink jet recording method. When performing color record, according to a conventional method, a full color image can be further formed by cyanogen, MAZENDA and yellow, and the subtractive color mixture using black if needed.

[0047] In order for the member 24 for protection stratification pasted up on the ink absorption layer 26 to make it the transparent layer which a recorded material 21 protects, it carries out as follows.

[0048] According to image information, a recorded material 21 and the imprint material 22 are united [at the place which drove in ink and formed the image] with the ink absorption layer 26 of a recorded material 21 for the member 24 for protection stratification in piles by the ink jet recording method in the field by the side of the ink absorption layer 26 of a recorded material 21. It lets the unified recorded material 21 and the imprint material 22 pass between heating roller (recorded material covering means) 28a which a pair counters, and 28b, and heating pressurization is carried out with heating rollers 28a and 28b. The member 24 for protection stratification is stuck to the ink absorption layer 26 by pressure by this.

[0049] Then, after fully cooling a recorded material 21 and the imprint material 22 in the cooling section (interior material of a proposal of the upstream) 19 (it mentions later for details), a sheet plastic 23 is exfoliated from the member 24 for protection stratification. The member 24 for protection stratification remains in a recorded material 21, becomes a transparent layer, and protects the information recording surface of a recorded material 21.

[0050] Drawing 1 is the outline transverse-plane sectional view of lamination equipment 20.

[0051] Lamination equipment 20 has the ink jet recording device 11 which forms an information image in the field of the ink absorption layer 26 of a recorded material 21 by the ink jet recording method, and the lamination processing section 12 which forms a transparent protective layer in the printed ink absorption layer 26.

[0052] The ink jet recording apparatus 11 has the ink jet recording head 27. The ink jet recording head 27 gives ink according to image information to the ink absorption layer 26 of the recorded material 21 shown in drawing 2 (a), and forms an image. The recorded material 21 with which the image was formed is cut out by predetermined magnitude by the cutter 13.

[0053] the conveyance roller 14 after the recorded material 21 was cut out — a desiccation roller pair — it is sent to 15. until a recorded material 21 will be in the condition of being fixed to the imprint material 22 — a desiccation roller pair — stoving of 15 removes moisture. As for the dry recorded material 21, fixing of the imprint material 22 is performed by heating rollers 28a and 28b.

[0054] Heating roller 28a builds halogen heater 29a for heating heating roller 28a in the interior of a shaft, and has the rotary encoder which is not illustrated [which detects the rotational frequency of this roll] on the revolving shaft. Pressurization roller 28b is forced on heating roller 28a by the predetermined pressure by the pressurization device in which it does not illustrate. Halogen heater 29b is built also in pressurization roller 28b.

[0055] In the above configuration, if the tip of the recorded material 21 conveyed with the conveyance roller 14 is detected by the media sensor 16, while the pressure welding of the pressurization roller 28b will be carried out to heating roller 28a by the pressurization device in which it does not illustrate, the rolling-up roll (rolling-up body of revolution) 17 of the rollers 28a and 28b of a pair and a sheet plastic 23 by which heating pressurization was carried out begins rotation with a predetermined rotational speed in the direction of an arrow head, respectively.

[0056] From the periphery rate of a heating roller 14, it is set up quickly a little and, as for the periphery rate of the rolling-up roll 17 which equips a non-illustrated driving shaft with a clutch device, predetermined tension has always joined the sheet plastic 23. The clutch device which begins to roll and has been prepared also in the roll (supply body of revolution) 18 at the rolling-up roll 17 in which the imprint material 22 is sent out, and the same clutch device are established. For this reason, it began to wind and the roll 18 has received the turning effort of a motor in hard flow with the hand of cut of an arrow head. Consequently, it began to wind and predetermined tension has also joined the imprint material 22 by the side of a roll 18. It begins to wind with the rolling-up roll 17, and the roll 18 constitutes the laminate film transit means.

[0057] Next, the laminating of the member 24 for protection stratification is carried out to the ink absorption layer 26 of the recorded material 21 which is shown in drawing 2 (b) and by which image formation was carried out, and a recorded material 21 and the imprint material 22 pass along between the heating rollers 28a and 28b of a pair, with a laminating condition maintained. At this time, a recorded material 21 and the imprint material 22 receive heat as occasion demands and thrust.

[0058] Whenever [welding-pressure / in the heating rollers 28a and 28b of a pair / or stoving temperature] is set up according to the class of imprint material 22 used. The member 24 for protection stratification is stuck to the ink absorption layer 26 by this processing by pressure, and becomes the transparent protective layer of a recorded material 21 by it. Heat is quickly taken by the down-stream cooling section 19, and this imprint material 22 and recorded material 21 fall even to the temperature near the temperature of the cooling section 19 by it. This cooling section 19 is arranged so that the imprint material 22 may be contacted. The cooling section 19 is cooled from the inside of the imprint material 22 and recorded material 21 which were heated with the heating rollers 28a and 28b of a pair, and had heat, and the imprint material 22 side.

[0059] This cooling process is processing for making it easy to weaken the adhesive strength of the sheet plastic 23 of the imprint material 22, and the member 24 for protection stratification, and to exfoliate the member 24 for protection stratification from a sheet plastic 23 with a recorded material 21 by cooling.

[0060] By the way, if it exfoliates while cooling has been inadequate, a sheet plastic 23 cannot be certainly exfoliated from the member 24 for protection stratification. Consequently, without the ability separating from a sheet plastic 23, with a sheet plastic 23 and one, the member 24 for protection stratification rolls round a recorded material 21, involves in a roller 17, and may generate a jam. Moreover, since the adhesive strength of the member 24 for protection stratification and a sheet plastic 23 is stronger than the adhesive strength of the member 24 for protection stratification, and a recorded material 21, after a sheet plastic 23 exfoliates from the member 24 for protection stratification, the part (peeling) which lacked in the member 24 for protection stratification partially in the sheet plastic 23 remains, and grace may be reduced. A cooling process is required in order to prevent the above mentioned.

[0061] In addition, since the direction made into low temperature has the heat characteristic in which a sheet plastic 23 and the member 24 for protection stratification tend to exfoliate finely, the cooling process is needed, but the imprint material 22 of this operation gestalt does not necessarily need a cooling process, when it has the heat characteristic which is easy to exfoliate at an elevated temperature.

[0062] Next, the actuation which exfoliates the sheet plastic 23 of the imprint material 22 good is explained through the above processes from the recorded material 21 which was united with the imprint material 22. First, when separation of the point of a recorded material 21 lets the recorded material 21 with which the passage pass of the small radius of curvature of the fixed guide (interior material of a proposal) 31 arranged in the downstream of the cooling section 19 was fixed to the imprint material 22 as usual pass, the member 24 for protection stratification pasted up on the rigid high recorded material 21 dissociates from a sheet plastic 23, and is performed.

[0063] That is, the lamination equipment 20 of this operation gestalt separates the member 24 for protection stratification of the point of a recorded material 21 from a sheet plastic 23 using the difference in the flexural rigidity of the imprint material 22 and a recorded material 21.

[0064] However, the member 24 for protection stratification of the back end section of a recorded material 21

cannot be made to separate from a sheet plastic 23 the way things stand. For this reason, the back end section of a recorded material 21 rolls round with a sheet plastic 23, and may be involved in a roll 17. Moreover, a possibility that a fillet may be generated is also in the back end section of a recorded material 21 as usual.

[0065] Then, the lamination equipment 20 of this operation gestalt has structure which has arranged the division plate (pushing means) 33 which rotates centering on the shaft 35 of the direction which intersects perpendicularly with the passage pass of the imprint material 22 to the field which becomes the cooling section 19 under a recorded material 21 between sheet discharge roller pair 32.

[0066] In drawing 3 (a), radii section (contact section) 19a of the downstream angle of the cooling section 19 is a circular face with small radius of curvature from the downstream angle of the conventional heat sink 79. The division plate 33 has U character-like radii section (contact section) 33a at the tip of one plate. The radius of curvature of radii section 33a is set up more greatly than the radius of curvature of radii section 19a.

[0067] If point 21a of a recorded material 21 puts in the fixed guide 31, a sheet plastic 23 will separate from the member 24 for protection stratification pasted up on the recorded material 21, and will be rolled round with the rolling-up roll 17. A division plate 33 separates from a recorded material 21, and he is trying not to become the hindrance of exfoliation actuation of the member 24 for protection stratification and sheet plastic 23 which have been pasted up on point 21a of a recorded material 21 at this time. Moreover, at this time, back end section 21b of a recorded material 21 is in the location of the cooling section 19, and is cooled.

[0068] the sheet discharge roller pair which shows point 21a of a recorded material 21 to drawing 1 as it is — it is sent to 32. as shown in drawing 2 (c), the member 24 for protection stratification pastes the ink absorption layer 26, and a recorded material 21 is protected by the member 24 for protection stratification with the transparent ink absorption layer 26, and is shown in drawing 3 (b) — as — a sheet discharge roller pair — it is made to go straight on by 32

[0069] After point 21a of a recorded material 21 dissociates from a sheet plastic 23, back end section 21b of the recorded member 21 moves between radii section 19a of the downstream angle of the cooling section 19, and radii section 33a of a division plate 33. Since the bearer rate of a recorded material 21 is fixed, the lamination equipment 20 of this operation gestalt determines the location of back end section 21b by the elapsed time after the media sensor 16 detects back end section 21b. Of course, if a pilot switch, a photo sensor, etc. of dedication are allotted between radii section 19a of the downstream angle of the cooling section 19, and radii section 33a of a division plate 33, the location detection precision of back end section 21b can be raised. Furthermore, also when changing the bearer rate of a recorded material 21, it can respond.

[0070] If back end section 21b of a recorded material 21 moves between radii section 19a of the downstream angle of the cooling section 19, and radii section 33a of a division plate 33, rolling-up actuation of the rolling-up roll 17 will stop, and back end section 21b will stop between radii section 19a and radii section 33a. And as a division plate 33 shows drawing 3 (c), it rotates in the direction of arrow-head A. The rolling mechanism of a division plate 33 is constituted by the non-illustrated cam, a spring, a sensor, etc.

[0071] By this, the conveyance pass of a recorded material 21 will be bent by radii section 19a of the cooling section 19, and radii section 33a of a division plate 33. At this time, the angle of bend alpha of the imprint material 22 crooked by radii section 19a is set as the include angle automatically separated by rigid difference like the member 24 for protection stratification of point 21a and sheet plastic 23 which were described previously. Thus, a recorded material 21 is bent on the way the whole imprint material 22.

[0072] Next, as drawing 4 (a) shows, the imprint material 22 begins to wind, the inversion drive of the roll 18 is carried out, and the driving-backward line of the imprint material 22 and the recorded material 21 is carried out. this time — tip 21a of a recorded material 21 — a sheet discharge roller pair — since it is inserted into 32, the driving-backward line of the recorded material 21 cannot be carried out. for this reason, a sheet discharge roller pair — the rollers of 32 are made to estrange Moreover, the rollers of heating roller pair 28a and 28b are made to estrange so that the imprint material 22 may carry out a driving-backward line and can carry out the thing of it.

[0073] Thereby, as shown in drawing 4, when back end section 21b of a recorded material 21 passes radii section 19a of the cooling section 19, the member 24 for protection stratification separates from a sheet plastic 23 by the rigid difference between a recorded material 21 and the imprint material 22 like point 21a. According to this way of separating, since it is based on the completely same principle as point 21a, generating of a fillet can be prevented compared with the approach of pulling horizontally stated in the conventional example.

[0074] In addition, when making it drive backward on a recorded material 21 and the imprint material 22 while conveyance pass had been made crooked, while reducing the load given to a recorded material 21 and the

imprint material 22 and preventing the deflection of the recorded material 21 after a lamination, in order to reduce the load which joins the motor by rewinding [of the imprint material 22], radii section 19a is formed in the downstream edge of the cooling section 19.

[0075] It stops, when the member 24 for protection stratification of back end section 21b separates from a sheet plastic 23 by rewinding, as it begins to wind and rewinding actuation of the imprint material 22 with a roll 18 is shown in drawing 4 (b). Then, a division plate 33 is returned to the original position in readiness, as shown in drawing 5 (a). moreover, a sheet discharge roller pair — the pressure welding of each rollers of 32 and heating roller pair 28a and 28b is carried out.

[0076] If a division plate 33 returns to a position in readiness, conveyance pass will return from the crooked condition to a linear condition. At this time, back end section 21b of a recorded material 21 has separated from the sheet plastic 23 with the member 24 for protection stratification (refer to drawing 5 (a)). Then, the scudding line of a recorded material 21 and the imprint material 22 is carried out again. The member 24 for protection stratification of the transit direction pars intermedia of a recorded material 21 also separates from a sheet plastic 23. Consequently, finally a recorded material 21 is laminated and discharged by the member 24 for protection stratification.

[0077] In addition, when back end section 21a of a recorded material 21 passes the fixed guide 31, the part of a before [from the fixed guide 31 / heating roller pair 28a and 28b] remains as a reusable part. For this reason, finally, it begins to wind, only a fixed rotation reverses a roller 18 again, and the imprint material 22 is rewound. By this, the imprint material 22 can be used efficiently without futility.

[0078] Since separation with the member 24 for protection stratification of back end section 21b of a recorded material 21 and a sheet plastic 23 can be ensured according to the lamination equipment 20 of this operation gestalt as explained above, good lamination processing can be performed to a recorded material 21. Moreover, the imprint material 22 can also be used effectively without futility.

[0079] (Lamination equipment of the 2nd operation gestalt) The lamination equipment 40 of the 2nd operation gestalt is explained based on drawing 6 thru/or drawing 10 .

[0080] Although it has the ink jet recording device 11 and the lamination processing section 34 like [the lamination equipment 40 of the 2nd operation gestalt] the lamination equipment 20 of the 1st operation gestalt, the configuration of a division plate differs from the prepared location. Therefore, mainly a division plate is explained, the same sign is given to the same part, and explanation of the part is omitted.

[0081] a division plate (penetration means) 41 is formed in the fixed guide (transit direction modification means) 31 side — having — point 41a of a division plate 41 — the fixed guide 31 — it is located a little in the downstream. Point 41a of a division plate 41 is formed in inverse L-shaped [almost right-angled]. As for angle 41c of this point 41a, it is desirable to make radius of curvature small if possible for the reason mentioned later. Moreover, since corner 43a of the downstream of the cooling section 43 is not used for separation with a sheet plastic 23 and the member 24 for protection stratification, it does not have to make the radius of curvature of radii small especially. moreover, the reason mentioned later — a sheet discharge roller pair — the nip pressure of 42 is set up smaller than the nip pressure of the sheet discharge roller 42 of the 1st operation gestalt.

[0082] As shown in drawing 7 , the ultra-thin tapes 51 and 51 are stuck on both the sides of the cross direction of a division plate 41. Spacing L of these tapes 51 and 51 is made larger than the width of face W of a recorded material 21 and the imprint material 22. Moreover, as shown in drawing 9 , the thickness T1 of a tape 51 is thick slightly from the thickness T2 of the imprint material 22. A division plate 41 seems for this reason, not to contact the fixed guide 31 and the imprint material 22, although a tape 51 contacts the fixed guide 31. Therefore, a clearance S1 is generated between a division plate 41 and the fixed guide 31. This clearance S1 is almost the same as the thickness T2 of a tape 51. Since the imprint material 22 is located in this clearance S1, few clearances S2 are generated also between a division plate 41 and the imprint material 22. In addition, the tape 51 shown in drawing 9 and the imprint material 22 are exaggeratingly drawn thickly, in order to make a configuration easy to understand. For this reason, the actual dimension ratio of each part differs from drawing 9 .

[0083] In drawing 8 (a), when a recorded material 21 sticks to the imprint material 22 and point 21a of a recorded material 21 passes the fixed guide 31, like the 1st operation gestalt, while the member 24 for protection stratification had pasted the recorded material 21, united with a recorded material 21, it goes straight on by the rigid difference between a recorded material 21 and the imprint material 22, and separates from a sheet plastic 23. A sheet plastic 23 is rolled round by the rolling-up roll 17. At this time, back end section 21b of a recorded material 21 contacts the cooling section 43, and is cooled. Moreover, a division plate 41 stands by in the position in readiness distant from the recorded material 21, and he is trying not to check exfoliation with the member 24

for protection stratification, and a sheet plastic 23. point 21a of a recorded material 21 — a non-illustrated guide — a sheet discharge roller pair — it is sent to 42.

[0084] a recorded material 21 — a sheet discharge roller pair — it is inserted into 42 and a recorded material 21 is sent to an eject direction. however, a sheet discharge roller pair — ***** of 42 — the sheet discharge roller pair of the 1st operation gestalt — it is set up smaller than ***** of 32. Extent of this ***** is adjusted by minimum ***** which can discharge a recorded material 21.

[0085] for this reason — a condition [that the member 24 for protection stratification has been connected with back end section 21b of a recorded material 21] — a sheet discharge roller pair — the member 24 for protection stratification pasted up on back end section 21b cannot be lengthened by the pinching force of 42. therefore, a sheet discharge roller pair — 42 is in a slip condition and will lead the recorded material [having been connected with the member 24 for protection stratification] 21.

[0086] However, since a sheet plastic 23 rolls round and it is rolled round with a roll 17, as shown in drawing 8 (b), back end section 21b of the member 24 for protection stratification and a recorded material 21 moves in the direction rolled round by the rolling-up roll 17.

[0087] Then, a division plate 41 is rotated and the fixed guide 31 is made to approach, as shown in drawing 8 (c). As shown in drawing 5, tapes 51 and 51 are stuck on the both ends of a division plate 41. For this reason, a tape 51 is pushed against the fixed guide 31 by predetermined thrust. A division plate 41 makes the imprint material 22 placed between the clearances S1 between the fixed guides 31 as shown in drawing 9. This clearance S1 is larger than the thickness T1 of the imprint material 22, and narrow from thickness T3 of a recorded material 21. Therefore, although the imprint material 22 can pass through a clearance S1 as it is when carrying out the driving-backward line of the imprint material 22, a recorded material 21 can pass no longer through a clearance S1.

[0088] Then, if the driving-backward line of the imprint material 22 is carried out, although the imprint material 22 is returned through a clearance S1, a recorded material 21 cannot pass through a clearance S1. Since point 41a of a division plate 41 is formed in inverse L-shaped, as a broken line shows, a recorded material 21 is caught by inverse L-shaped flat side (recorded material receptacle stop side) 41b, and becomes almost level. However, the imprint material 22 is pulled back just under along with the fixed guide 31. Consequently, the member 24 for protection stratification of the imprint material 22 is lengthened. It separates from the fixed guide 31, and the member 24 for protection stratification lengthens it, and it seems not to check julienning actuation with a non-illustrated spring etc., in the meantime, since the division plate 41 is energized by the fixed guide 31.

[0089] Since it is not the direction which the direction which tears the member 24 for protection stratification is a direction which forces the member 24 for protection stratification, and tears off to a recorded material 21, the member 24 for protection stratification is certainly stuck to back end section 21b of a recorded material 21, and stops being able to separate easily theoretically.

[0090] Moreover, since a fillet is pulled in the shear direction as compared with the approach of pulling in the direction along the front face of the recorded material 21 which was being performed conventionally when the direction which tears the member 24 for protection stratification is a direction which forces the member 24 for protection stratification to the front face of a recorded material 21, the fillet has elongation-come to be hard. And since the generated fillet is also going in the thickness direction of a recorded material 21, the fillet has stopped being able to be conspicuous easily. Thus, little back end separation of a fillet or exfoliation can be performed to a recorded material 21 by pulling the member 24 for protection stratification in the almost right-angled direction.

[0091] It separates from the fixed guide 31, and the member 24 for protection stratification lengthens it, and it seems in addition, not to check julienning actuation with a non-illustrated spring etc., since the division plate 31 is energized by the fixed guide 31 while the member 24 for protection stratification lengthens and julienning actuation is performed.

[0092] Moreover, in order for the lamination equipment 40 of this operation gestalt to rewind the imprint material 22 and to lengthen the member 24 for protection stratification, Since rewinding actuation of the imprint material 22 for using effectively the imprint material 22 which remained after carrying out lamination processing of the recorded material 21 currently performed with the lamination equipment 20 of the 1st operation gestalt can be performed continuously, the throughput of the output of a recorded material 21 can be raised.

[0093] when the member 24 for protection stratification lengthens and julienning actuation is completed, a recorded material 21 is shown in drawing 10 (a) and (b) — as — a sheet discharge roller pair — it is discharged by 42. A division plate 31 returns to an evacuation location.

[0094] In addition, although division plates 33 and 41 are crooked and are formed in the plate, they may use a rod-like member. In this case, as a member of the shape of a rod used instead of a division plate 33, the cylindrical member of the same radius as the radius of curvature of radii section 33a is desirable. Moreover, when using a cylindrical member instead of a division plate 41, it is desirable that the part which is equivalent to a part of cylindrical member at flat side 41b and angle 41c is formed.

[0095] Moreover, an image is formed beforehand and the lamination equipments 20 and 40 may also send a recorded material 21 into the overheating rollers 28a and 28b directly, although a recorded material 21 is supplied from the ink jet recording device 11. Therefore, the ink jet recording device 11 is not necessarily needed.

[0096] Furthermore, although the cooling section 19 touches the imprint material 22, you may make it contact a recorded material 21.

[0097] As mentioned above, since the lamination equipments 20 and 40 of the 1st and 2nd operation gestalt make the passage pass of the film for fixing crooked rapidly and separate a sheet plastic and the member for protection stratification by the rigid difference between a recorded material and imprint material when separating the recorded material after a lamination from a sheet plastic, they can separate certainly the member for protection stratification of the point of a recorded material from a sheet plastic.

[0098] Moreover, since the lamination equipment 20 of the 1st operation gestalt performs the member for protection stratification separation with the member for protection stratification and sheet plastic in the back end section of a recorded material, and length julienned by the same technique as the point of a recorded material by the division plate 41, it can supply a recorded material with the sufficient quality which does not have a fillet like a point.

[0099] Furthermore, the lamination equipment 40 of the 2nd operation gestalt Separation with the member for protection stratification and a sheet plastic, [in / shearing force is used in a perpendicular and the pressurization direction for the member for protection stratification to a recorded material to a recorded material, and / the back end section of a recorded material] Since the length julienned member for protection stratification is performed, good back end separation which neither the fillet of the member for protection stratification nor peeling produces can be performed, and the recorded material laminated with sufficient quality can be supplied. furthermore, the thing for which the lamination equipment 40 of the 2nd operation gestalt performs back end separation actuation and rewinding actuation of imprint material to coincidence -- things can be made, the time amount of one process of lamination processing can be shortened, and the throughput of equipment can be raised.

[0100]

[Effect of the Invention] Since the lamination equipment of this invention performs the length julienned member for protection stratification by the same technique as the point of a recorded material with a pushing means, it can supply a recorded material with sufficient quality without a fillet.

[0101] Since shearing force is used for the lamination equipment of this invention in the pressurization direction for the member for protection stratification to a recorded material to a recorded material and it performs the length julienned member for protection stratification, it can supply the recorded material laminated with sufficient quality as neither the fillet of the member for protection stratification nor peeling produced.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the outline cross-section front view of the lamination equipment of the operation gestalt of this invention.

[Drawing 2] It is the enlarged drawing which looked at a recorded material and imprint material from the edge.

(a) It is the enlarged drawing which looked at the recorded material from the edge.

(b) It is the enlarged drawing which stuck imprint material to the recorded material.

(c) It is the enlarged drawing of the recorded material by which lamination processing was carried out.

[Drawing 3] It is drawing for explanation of lamination equipment of operation.

(a) It is drawing in the condition that the recorded material is approaching the fixed guide.

(b) It is drawing in the condition that a recorded material passes the cooling section and crookedness is made to start by the division plate.

(c) A recorded material is drawing in the condition that you were made to be crooked by the division plate.

[Drawing 4] It is drawing for explanation of the lamination equipment which followed drawing 3 of operation.

(a) It is drawing in the condition of carrying out the driving-backward line of the imprint material from the condition of drawing 3 (c).

(b) It is the partial enlarged drawing of (a).

[Drawing 5] It is drawing for explanation of the lamination equipment which followed drawing 3 of operation.

(a) It is drawing in the condition that the member for protection stratification adhering to the back end of a recorded material was cut.

(b) It is drawing in the condition that the laminated recorded material is discharged.

(c) After a recorded material is discharged, it is drawing in the condition of carrying out the driving-backward line of the imprint material.

[Drawing 6] It is the outline cross-section front view of the lamination equipment of other operation gestalten of this invention.

[Drawing 7] It is the perspective view of the division plate of the lamination equipment of drawing 6, a fixed guide, and imprint material.

[Drawing 8] It is drawing for explanation of the lamination equipment of drawing 6 of operation.

(a) The point of a recorded material is drawing in the condition of having passed the fixed guide.

(b) It is drawing of the upper part of the body which the back end section of a recorded material rolled round and was drawn in the roll.

(c) A division plate is drawing in the condition of having approached the recorded material.

[Drawing 9] It is the enlarged drawing of the point circumference of the division plate in drawing 8 (c).

[Drawing 10] It is drawing for explanation of the lamination equipment which followed drawing 9 of operation.

(a) It is drawing in the condition that the member for protection stratification adhering to the back end of a recorded material was cut.

(b) It is drawing in the condition that the laminated recorded material is discharged.

[Drawing 11] It is the outline front view of conventional lamination equipment.

[Drawing 12] In the lamination equipment of drawing 11, it is drawing when the back end section of a recorded material rolling round and being involved in a roll.

[Drawing 13] It is drawing for explanation of the lamination equipment of drawing 11 of operation.

(a) The back end section of a recorded material is drawing in the condition of approaching the fixed guide.

(b) It is drawing in the condition that the length julienned member for protection stratification was started.

(c) It is drawing in the condition that the member for protection stratification was lengthened.

[Description of Notations]

S1 Clearance between a division plate and a fixed guide
S2 Clearance between a division plate and imprint material
T1 Thickness of a tape
T2 Thickness of imprint material
alpha Include angle
11 Ink Jet Recording Device
12 Lamination Processing Section
17 Rolling-Up Roll (Rolling-Up Body of Revolution)
18 It Begins to Wind and is Roll (Supply Body of Revolution).
19 Cooling Section (Interior Material of Proposal of Upstream)
19a Radii section (contact section)
20 Lamination Equipment
21 Recorded Material
21a The point of a recorded material
21b The back end section of a recorded material
22 Imprint Material (Laminate Film)
23 Sheet Plastic (Heat-resistant Base Material)
24 Member for Protection Stratification
25 Base Material
26 Ink Absorption Layer
27 Ink Jet Recording Head
28a, 28b Heating roller (recorded material covering means)
31 Fixed Guide (Interior Material of Proposal, Transit Modification Means)
33 Division Plate (Pushing Means)
33a Radii section (contact section)
34 Lamination Processing Section
35 Shaft
37 Lamination Section
40 Lamination Equipment
41 Division Plate (Penetration Means)
41a Point
41b Flat side (recorded material receptacle stop side)
41c Angle

[Translation done.]

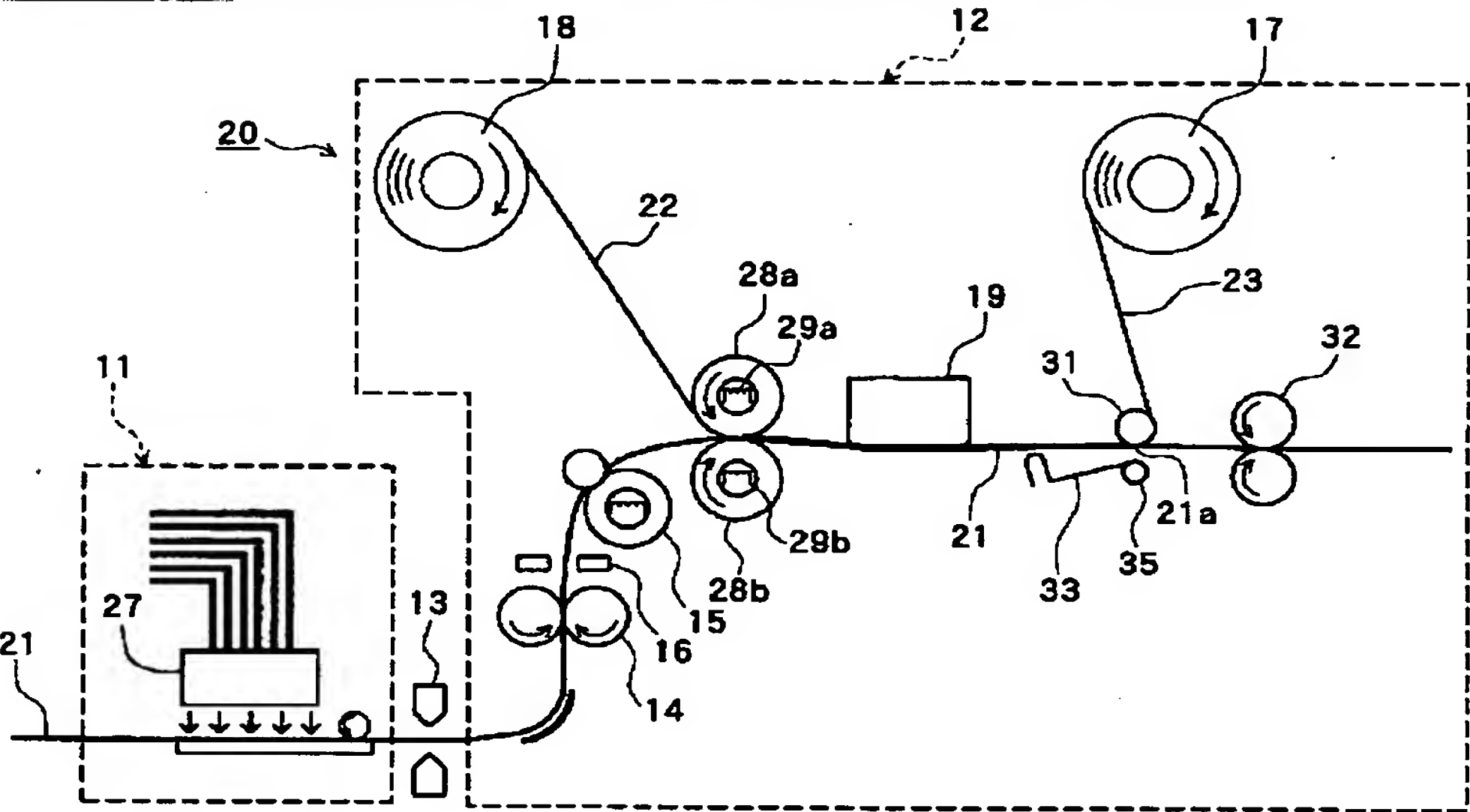
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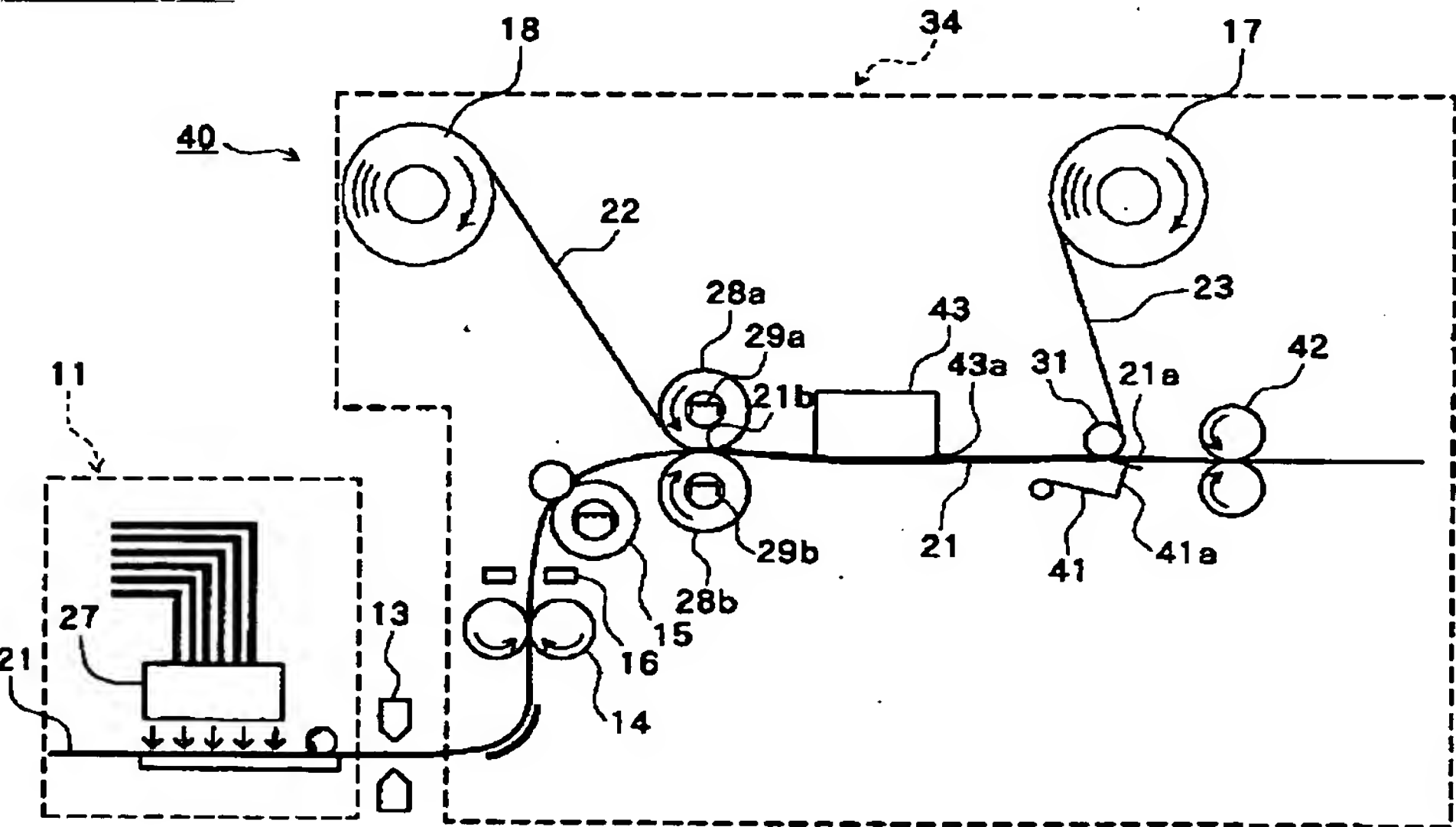
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DRAWINGS

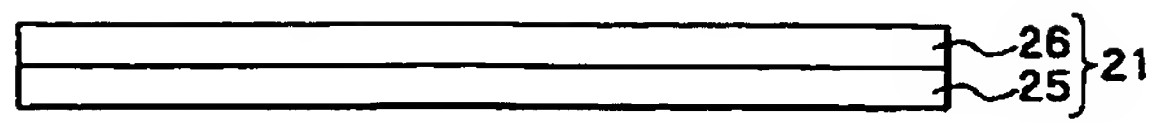
[Drawing 1]



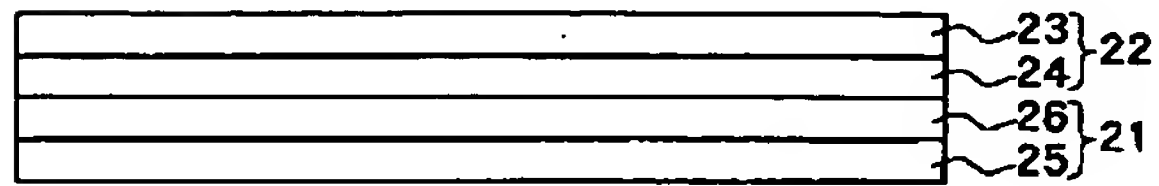
[Drawing 6]



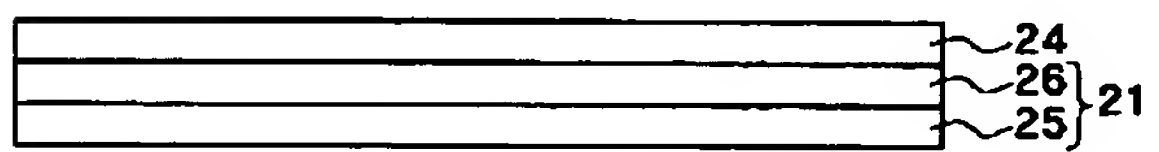
[Drawing 2]



(a)

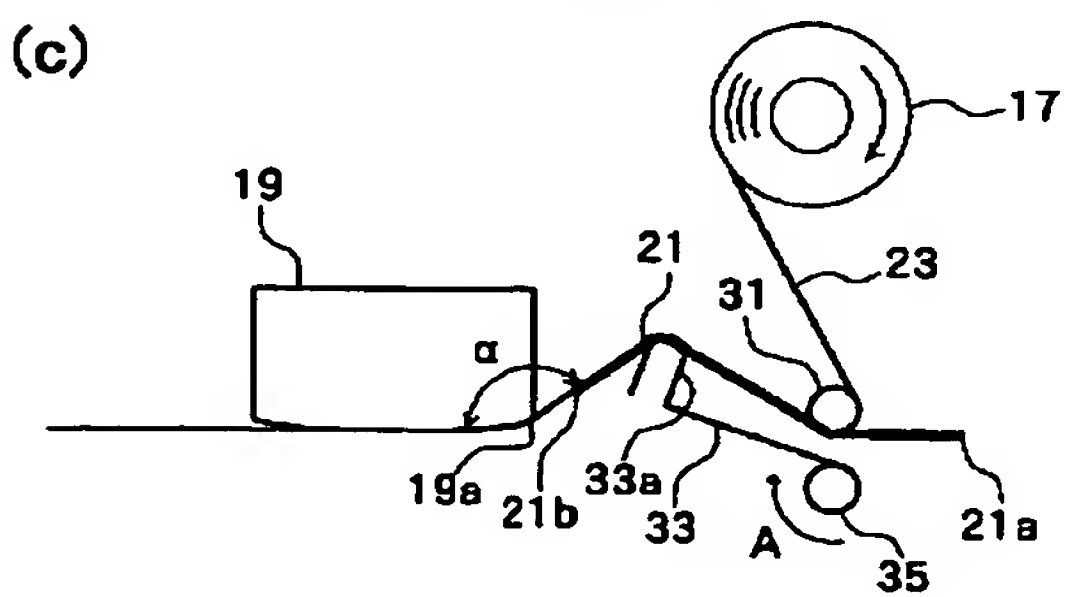
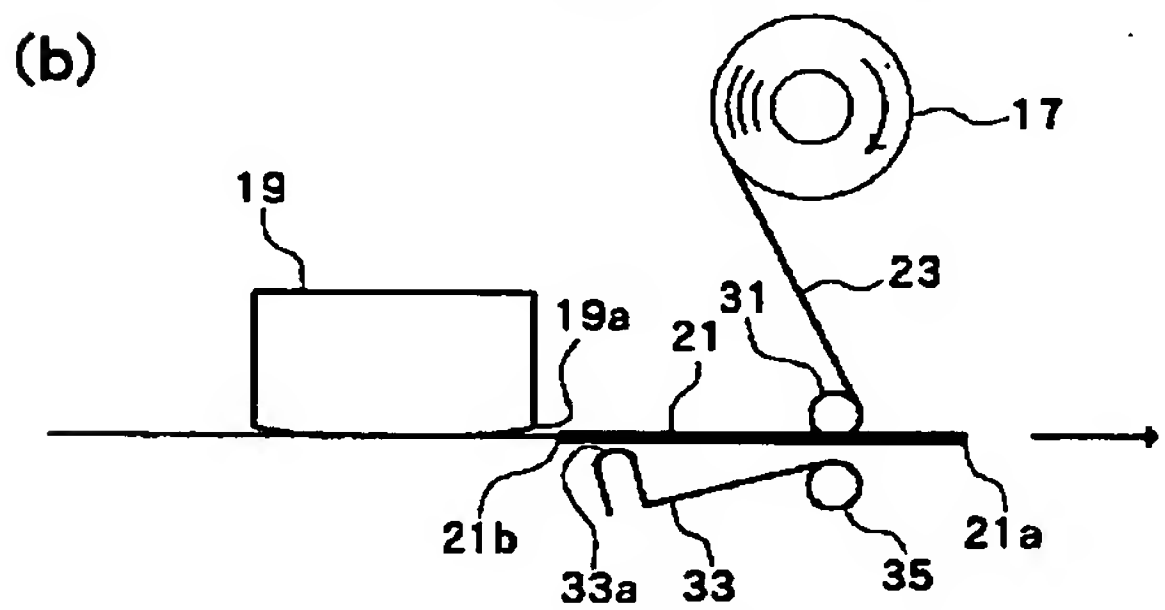
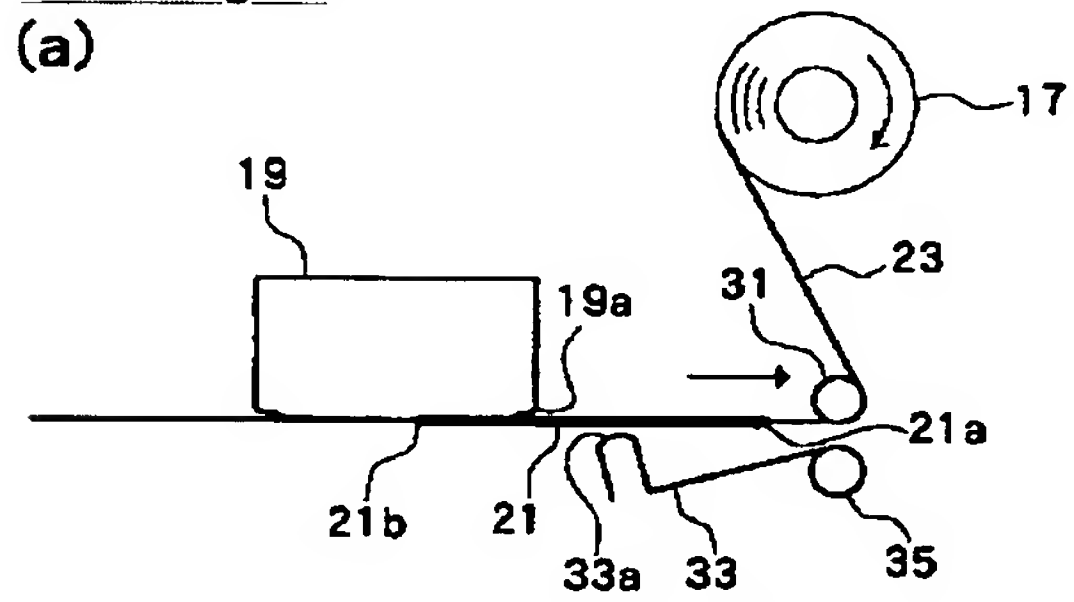


(b)

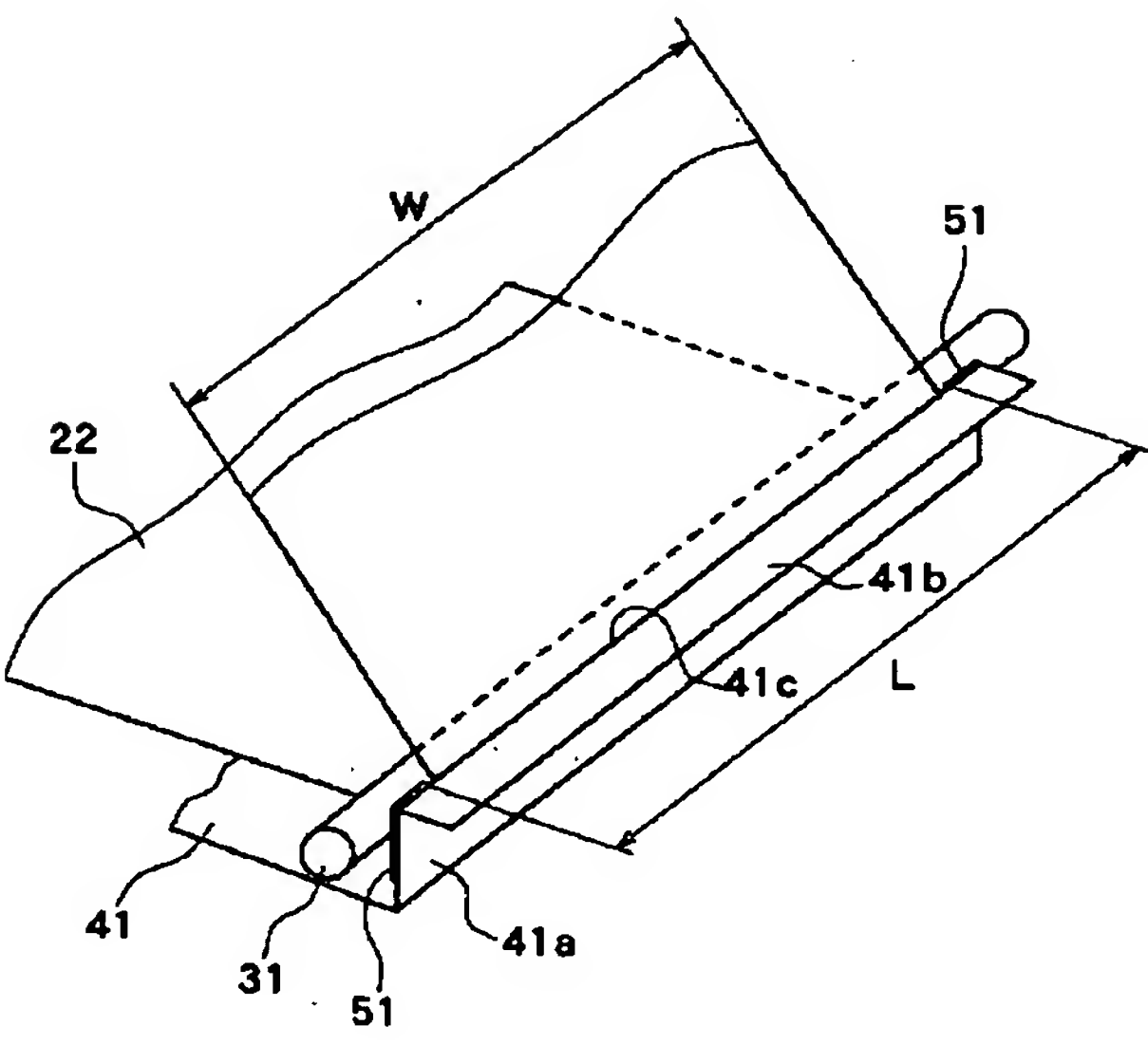


(c)

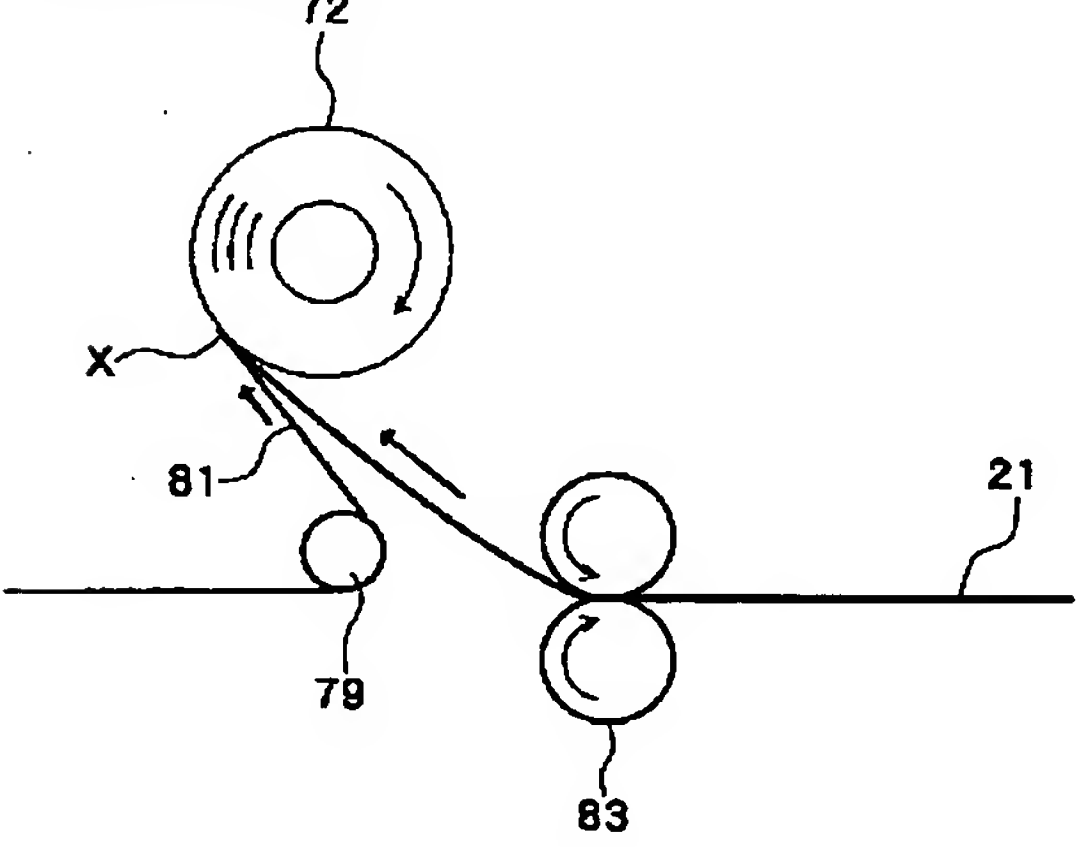
[Drawing 3]



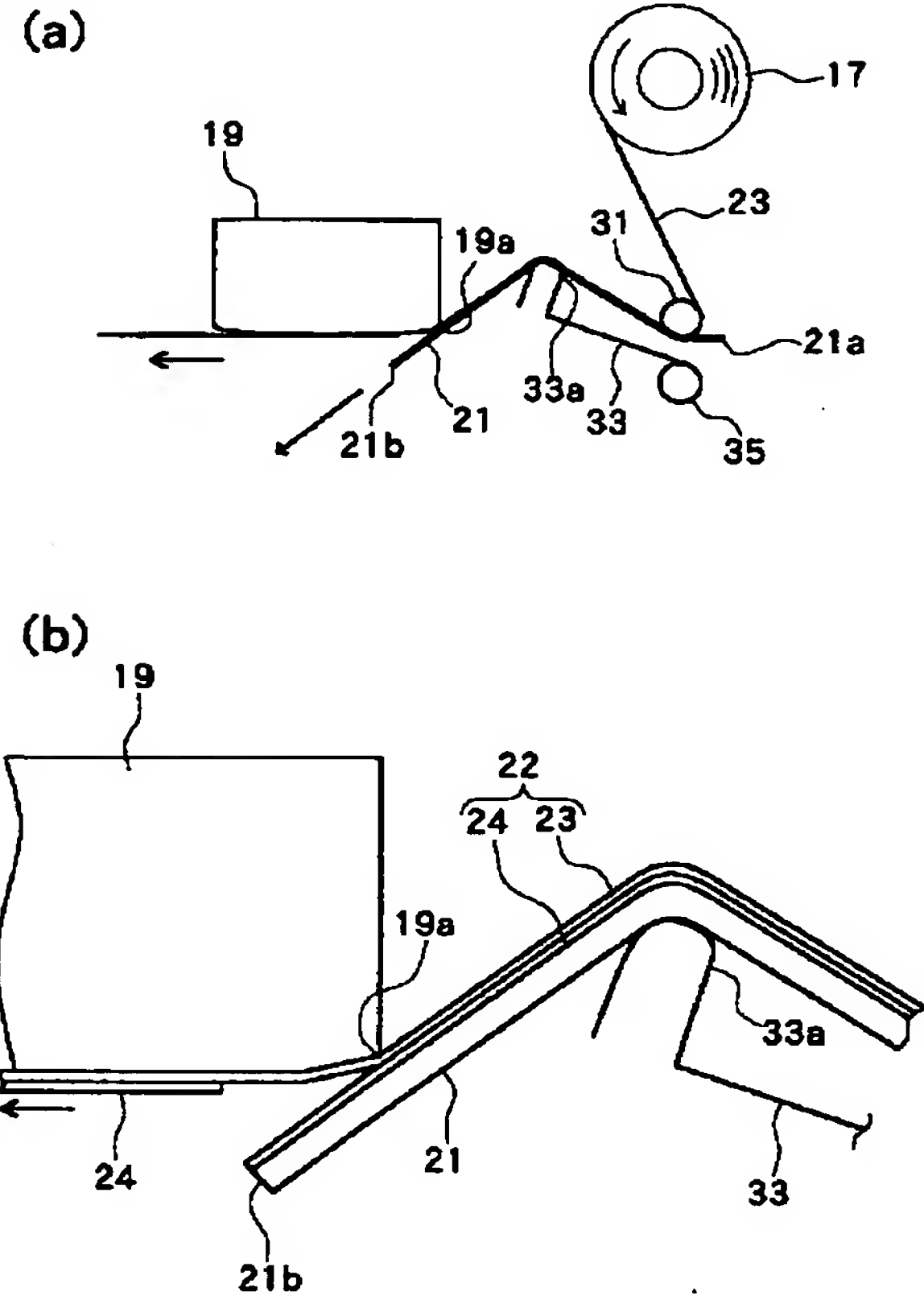
[Drawing 7]



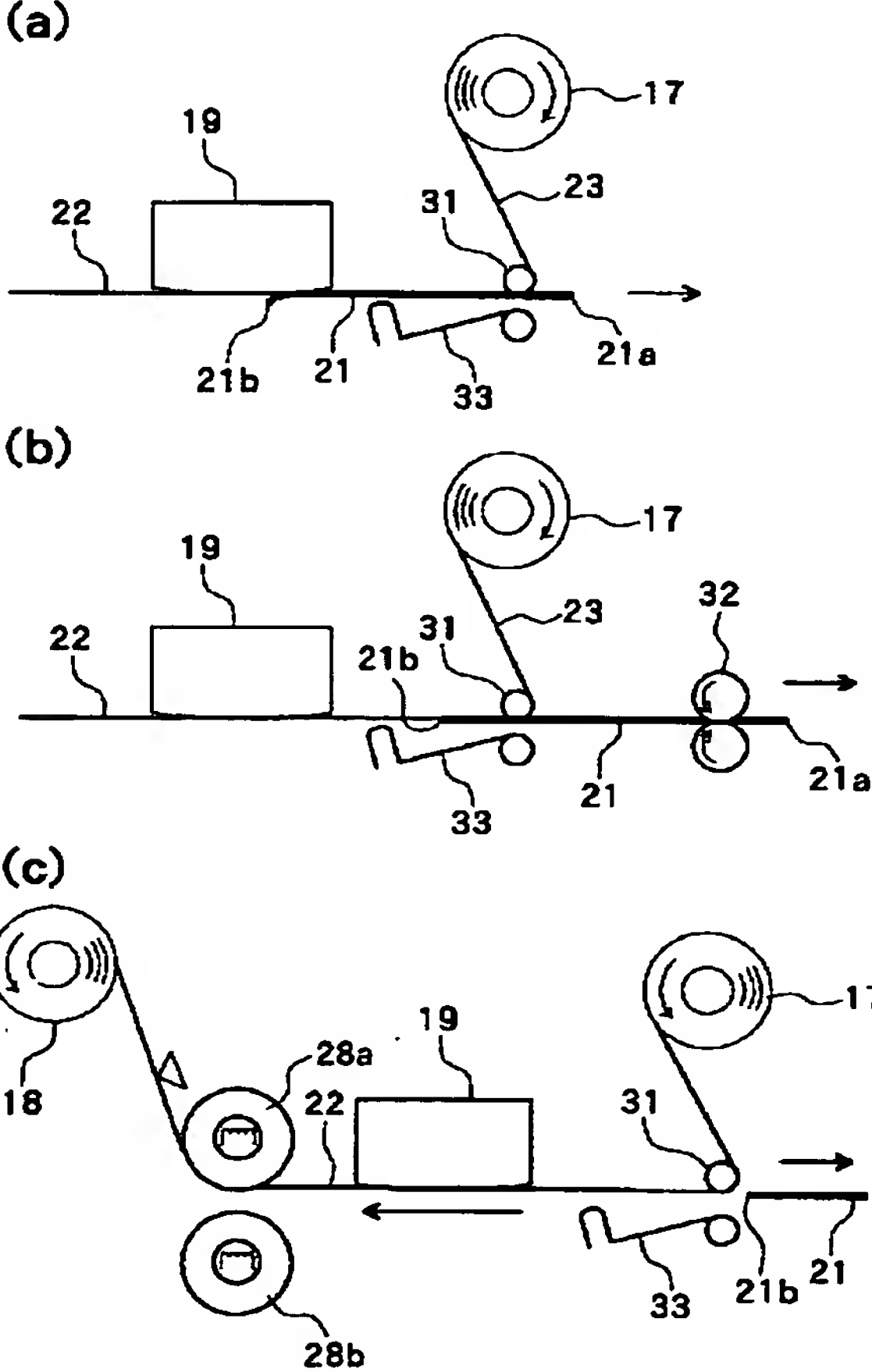
[Drawing 12]



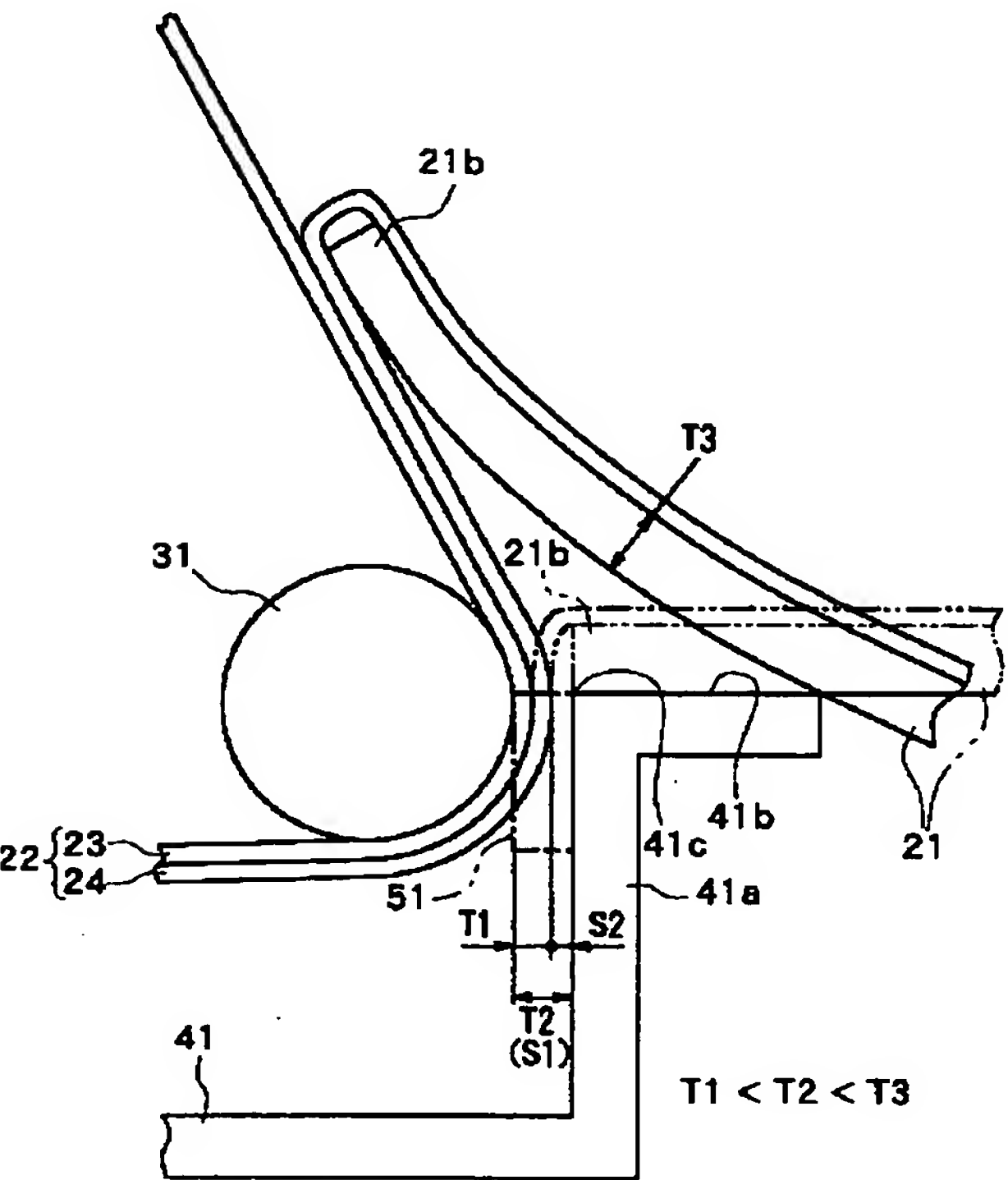
[Drawing 4]



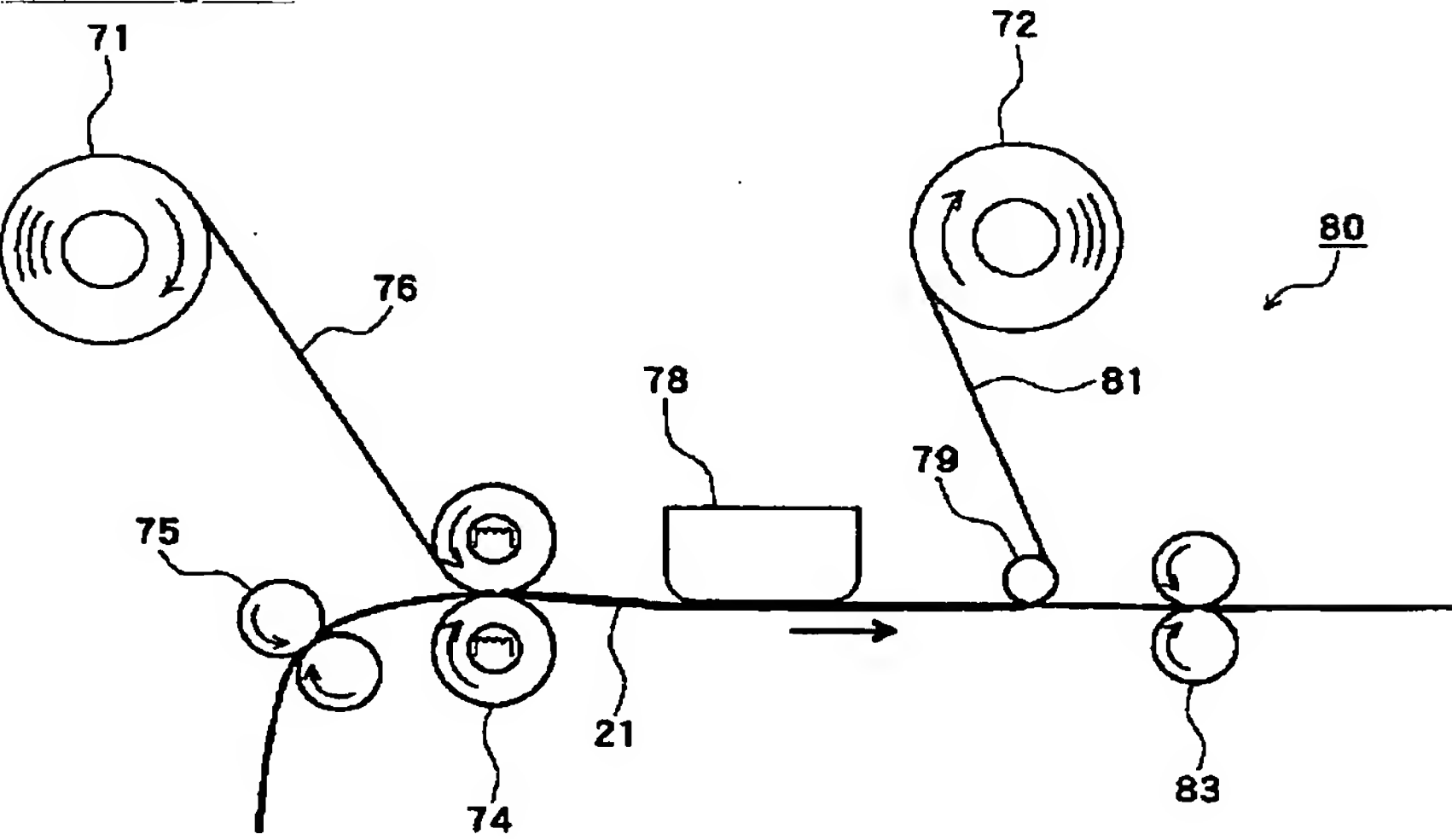
[Drawing 5]



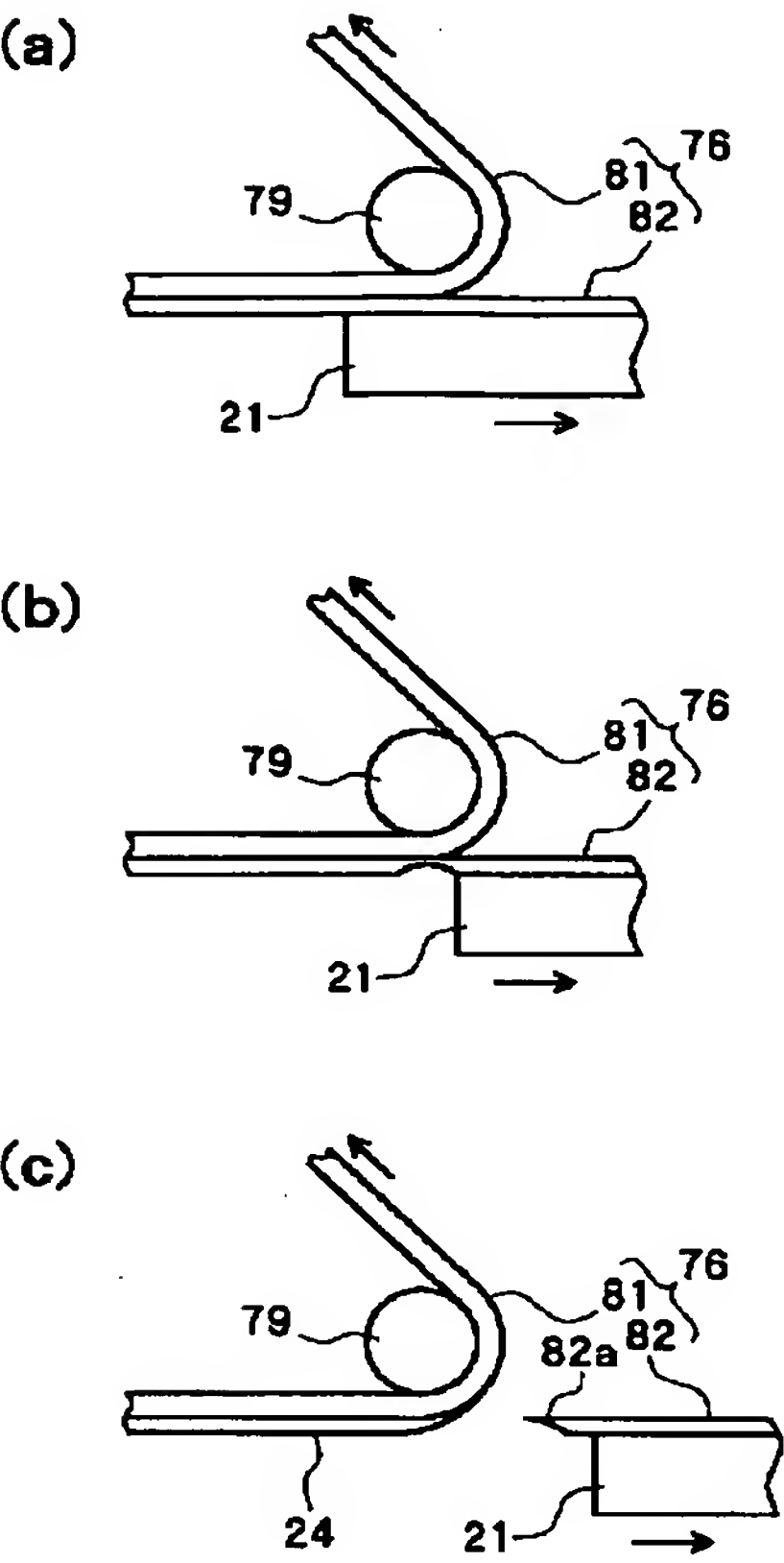
[Drawing 10]



[Drawing 11]



[Drawing 13]



[Translation done.]